

theory and laboratory work suitable for various examinations of the standard of London matriculation. The general arrangement of the work is very neat and methodical, descriptions of the experiments in connection with the theory being appended to each chapter. There are also numerous examples collected, principally from papers set in the London matriculation. The author has adopted the "ray" method, since he regards it as easier to understand than the "wave" method; but he is careful to proceed in such a manner as to admit of the development of the wave theory at a later stage without apparent contradiction, and, in the final chapter, introduces the student to the elements of this theory. To those who need the information it supplies this book may be in all respects thoroughly recommended.

(5) This consists of a series of simple experiments in heat, light, electricity, and sound. The procedure is to give the boy exact instructions of what to do, and to tell him to observe and record his results. Occasional questions bearing on the experiments are also asked. This method is certainly preferable to that which is sometimes adopted, viz. to allow the student to invent his own experiments. As the author points out, the ordinary schoolboy is usually incapable of originality in a subject which is new to him, and should at first, at any rate, follow instructions implicitly. In schools this collection of experiments should be found useful.

(6) The leading feature of this text-book is the extraordinary amount of ground covered in relation to the size of the volume. Attention is devoted to all the usual branches of physics, and many details are found which seldom occur in elementary treatises; indeed, from a purely descriptive point of view the work should suffice, not merely for preparation for intermediate, but also for final examinations. This condensation of material has been made possible, however, only at the expense of that mathematical treatment which is essential for both examinations. That this is no oversight is clearly indicated by the author's preface, in which it is asserted that mathematical reasoning, even of a simple sort, is found a stumbling-block by many students. This may be true, but we cannot agree that it forms a justification for overlooking the fact that an exact knowledge of physics is impossible without frequent recourse to mathematical processes. From the author's point of view, however, consistency demands that no unproved formulæ should be quoted, but this is by no means the case. The result of this avoidance of exact treatment has been to render the book very unequal, the descriptive portions being distinctly adequate and good, but the equally essential mathematics is looked for in vain. In fact, the contents may be described as insufficient for the serious student, and at the same time much too detailed to be useful as a popular treatment of the subject. The type and diagrams are good, and the more important statements are either in heavy type or in italics.

(7) There is no subject in which there is a greater demand for books on popular lines than electricity. This pamphlet forms the first part of such a book, and is devoted to electrostatics and magnetism.

NO. 2191, VOL. 87]

## OUR BOOK SHELF.

*Geologischer Führer durch das Mainzer Tertiärbecken.*

By Dr. C. Mordziol. I. Teil, Allgemeine Übersicht und Exkursionsführer in die Umgebung von Mainz und Wiesbaden. Pp. xii + 168, with 39 figures in the text. (Berlin: Gebrüder Borntraeger, 1911.) Price 5.60 marks.

In view of the increasing interest taken in Germany in field geology, it is to be regretted that this small guide to a very accessible district should be issued at so high a price. Schubert's Dalmatia in the same series is, in fact, slightly cheaper, and students at Bonn, Giessen, and Heidelberg may feel that they have a right to more liberal treatment. Dr. Mordziol, of Aachen, indicates at the outset the limits of the basin of Mainz, a region of subsidence, in which the youngest deposits lie in the centre, while the older Cainozoic strata appear upon the margins. The gravels laid down by the Rhine in glacial times actually lie below the present level of the sea (p. 2). On the south, the basin merges into the sunken valley-floor of the upper Rhine, as is apparent on any orographic map of southern Germany.

The hilly ground bordering on the basin includes a great variety of rocks, and the problem of the gneisses on the south side of the Taunus, which may be of Devonian age, is regarded as still undecided. The true interest of the basin itself lies in its Cainozoic strata. The author (p. 15) supports Sandberger's division of Oligocene from Miocene at the base of the Cerithium limestones, in opposition to Dollfus and Steuer, who include this limestone and the whole brackish water series above it as Miocene. These strata are clearly described and illustrated, and the terrestrial sands and gravels (p. 65), derived from the decay of earlier Cainozoic and still older rocks, are held to be of Lower Pliocene age. We may remember that the Deinotherium beds of Eppelsheim, north-west of Worms, containing Mastodon, Machairodus, and Hipparion, are included in this interesting area.

The author, in tracing characteristic siliceous pebbles onward from the Hipparion-sands into Holland, makes out a case for the existence of a pre-glacial northward-flowing Rhine (p. 68). He then proceeds to illustrate the basin by a series of excursions, in which the underlying Permian strata are not overlooked. An index of places is much needed, but will probably accompany the second part.

G. A. J. C.

*Evolution.* By Prof. Patrick Geddes and Prof. J. Arthur Thomson. Pp. 248. (Home University Library of Modern Knowledge.) (London: Williams and Norgate, n.d.) Price 1s. net.

PROFS. GEDDES and J. Arthur Thomson have added yet another to the large number of books already existing which are designed to deal with evolution in a manner suited to the needs both of the beginner in serious study and of the general reader. The reputation of the authors will have led us to expect at least accuracy in the statement of facts, and this anticipation is certainly fulfilled in the little volume before us. Apart from the region of fact, we seem to discern a twofold influence at work, leading, on one hand, to a caution in interpretation so extreme as sometimes, we fear, to confuse the inquirer; and admitting, on the other, a boldness of speculation which is somewhat likely to disconcert him.

As an example of the former tendency may be mentioned the authors' manner of dealing with the crucial question of the inheritance of somatic modifications. No uncertain sound should be given on a point like this, but it is doubtful whether the student with only the present book before him would be as much

impressed as he ought to be with the importance of the issue. The use of the word "saturating" (p. 197) does not make for clearness. The working of the second tendency is to be seen chiefly in those parts of the book which deal with social analogies and applications. These appear to us, although interesting and unconventional, to be somewhat far-fetched. But the book is a good one, and will make a strong appeal to the thoughtful.

F. A. D.

*The Evolution of Kingston-upon-Hull, as shown by its Plans.* By Thomas Sheppard. Pp. 203. (Hull: A. Brown and Sons, Ltd., 1911.) Price 3s. 6d. net.

WHEN this island first became the home of man the site of the city of Kingston-upon-Hull bore an aspect very different from that which it assumes at present. The North Sea washed a long line of cliffs extending from Hessle to Bridlington, and the Humber, even then a mighty river, ran straight out to sea. Then followed the great Ice age, which left behind it masses of glacial drift, the foundation of the present city. The milder climate which succeeded produced abundant vegetation, which gave rise to the bed of peat which covered the site. A single bronze axe found in it was probably dropped by some visitor from a canoe, and supplies the only record of prehistoric man. Then the water encroached on the land and laid down great deposits of silt along the present valley. The Romans do not appear to have occupied the place, and the first attempt to embank it is attributed to the Danes, who have left marks of their occupation in the plan of the older parts of the city. In time the place gained increased importance by the absorption of the adjoining villages, and in the fourteenth century the site was surrounded by a wall, of which, and of the old manor and palace of the King, whence the name of the city was derived, only a few stones remain. The later development of the city can be traced in the fine series of reproductions of old maps and drawings which illustrate this useful contribution to local history.

*Proceedings of the American Society for Psychical Research.* Vol. v., part i., April: A Case of Hysteria. By Dr. W. H. Hamilton, Dr. J. S. Smyth, Dr. Louis Millard, and James H. Hyslop. Pp. 672. (New York: The Society, 1911.) Price 6 dollars.

Is it worth while? Here is a tome of 660 pages devoted to the investigation of an apparently healthy young woman, Miss Burton (pseudonym), aged twenty-two, who is supposed to be able to pass into a trance-like state at will in order to become a "medium" in communication with the spirit world. There are the usual stories of raps, touchings, whistling, singing, combined whistling and singing, whispering, tambourine-playing, table levitation, &c., all by the spirits. The investigations show that the whole thing is trickery; but the investigators concede that this young damsel was perfectly honest so far as her phenomenal consciousness is concerned, but that her subconscious self was deceitful.

*A Revised Catalogue of the Indigenous Flowering Plants and Ferns of Ceylon.* By Dr. J. C. Willis. (Peradeniya Manuals of Botany, Entomology, Agriculture, and Horticulture, No. 2.) Pp. 188. (Colombo: H. C. Cottle, Government Printer, 1911.)

A CATALOGUE of Ceylon plants was prepared by Dr. Trimen, and published in the Journal of the Ceylon Branch of the Royal Asiatic Society in 1885; this has long been out of print; hence the necessity for the new catalogue now issued by Dr. Willis. The book is divided into two sections, enumerating respectively

native and introduced plants; the latter section includes nearly all the valuable economic plants. The catalogue supplies Sinhalese and Tamil names, also references to the pages in Trimen's "Flora of Ceylon," where descriptions of the species can be found. It is noticeable that very few new species have been discovered recently. The total numbers amount to 1095 genera and 3074 species in the first section, and in the second to 285 genera and 387 species. About twenty genera and very many species are endemic.

## LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

### The Scientific Misappropriation of Popular Terms.

IN his interesting address to the Conference of Delegates at the Portsmouth meeting of the British Association, as reported in NATURE of October 19, Prof. J. W. Gregory makes certain remarks to which I venture to take exception. I comment on them partly because they push the principle of priority further than it need be pushed, and partly because I am afraid that Prof. Gregory's advice "to admit that the spider is an insect" may be taken to heart by some of his audience at Portsmouth or by some of his readers in NATURE.

Zoologists will not be surprised to learn that the word "insect" formerly had a wider application than at present. Many of them will feel that Messrs. J. H. and A. B. Comstock are not fairly treated by being taken to task for telling their readers, in a general manual, that a spider is not an insect. So far as the account of the use of the word "insect" is intended to be a historical account of the subject, and no more, criticism is unnecessary. But if it is a serious attempt to reinstate "insect" in its former meaning, I think it should be resisted on the ground that this procedure would introduce confusion where everything is at present clear, and that it has no compensating advantages to recommend it.

We are, fortunately, not obliged to apply the rules of priority to zoological names of higher value than genera. There is no compulsion to substitute *Insecta* for *Arthropoda* on nomenclatorial grounds; and it cannot be disputed that to do so would be productive of endless confusion. I am prepared to follow Prof. Gregory in thinking that it may be inconvenient to employ a familiar popular term in an altered signification in scientific writings. But in the present instance the wider use of "insect" has been so long abandoned in literature that even in popular works the majority of authors understand "insect" exactly as it is understood by a zoologist.

For one reason or another it is not unusual for a word in popular use to change its meaning during the gradual evolution of a language. It would be simply pedantic, in many of these cases, to attempt to go back to what is supposed to be the original meaning. Would Prof. Gregory recommend us to use the last word in "mice and rats, and such small deer," in its earlier signification in preference to the meaning it has acquired in modern times?

Prof. D'Arcy Thompson has put zoologists under a deep debt of gratitude by the recent publication of his translation of the "Historia Animalium" of Aristotle. Those of us to whom the original has hitherto been practically a sealed book may learn from this translation that Aristotle, in a professedly zoological work, used *γένος* in practically the sense in which we use "class." I will conclude by asking whether the principles of priority are to be held to give any countenance to the substitution of "genus" for "class" in systematic zoology.

SIDNEY F. HARMER.

58 Albemarle Road, Beckenham, October 21.